

## ABSTRACT

The present invention relates to protracted human insulin derivatives in which the A21 and the B3 amino acid residues are, independently, any amino acid residue which can be coded for by the genetic code except Lys, Arg and Cys; Phe<sup>B1</sup> may be deleted; the B30 amino acid residue is (a) a non-codable, lipophilic amino acid having from 10 to 24 carbon atoms, in which case an acyl group of a carboxylic acid with up to 5 carbon atoms is bound to the  $\epsilon$ -amino group of Lys<sup>B29</sup>; or (b) the B30 amino acid residue is deleted or is any amino acid residue which can be coded for by the genetic code except Lys, Arg and Cys, in any of which cases the  $\epsilon$ -amino group of Lys<sup>B29</sup> has a lipophilic substituent; and any Zn<sup>2+</sup> complexes thereof with the proviso that when B30 is Thr or Ala and A21 and B3 are both Asn, and Phe<sup>B1</sup> is present, then the insulin derivative is always present as a Zn<sup>2+</sup> complex.